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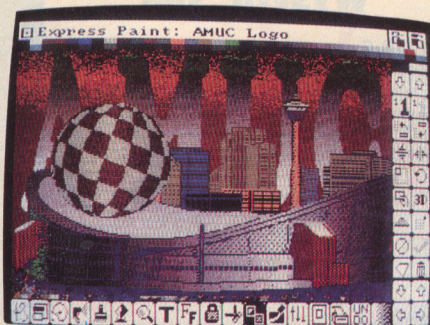
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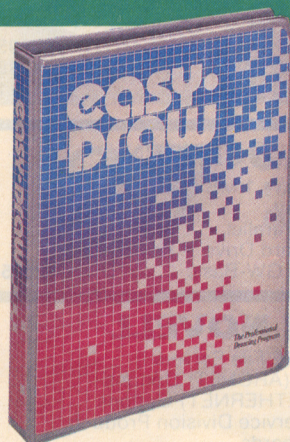


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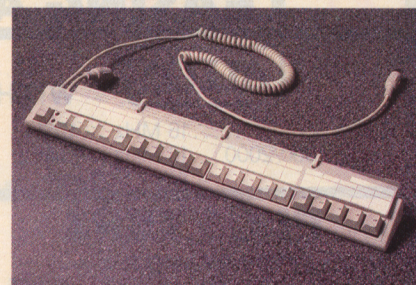
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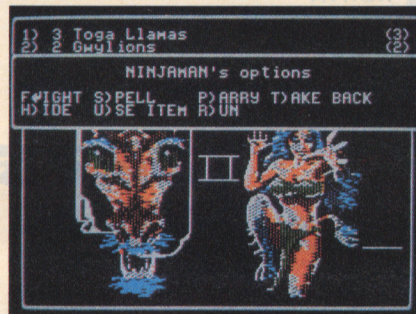
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STOS: OLD BOTTLES FOR NEW WINE

by D.F. Scott

I miss player-missile graphics. I miss scooting little multi-colored worms and spaceships about the screen with the abstract formula rather than the plastic mouse. In some pseudo-masochistic way, I miss watching a program crash and feeling the sinking in my chest upon realizing it was I who was at fault. I still have my old Atari 800; so it isn't as if somebody had stolen it, or it disappeared into an 8-bit abyss. The problem is (poor me) this grey thing—the one with the mouse sticking out of it, and the tiny disks—has consumed most of my computing time. Instead of watching my own handmade game programs crash, I'm watching other people's word processors and programming utilities crash.

So after I plugged STOS into the grey computer for the first time, and was dazzled by an expanding opening title, I was greeted with what felt like, at the time, a visit from an old friend. It was a BASIC command-line-interpreted operating system—not an overlay, mind you, but an entire system, bearing the message, "STOS BASIC v. 2.3...762630 bytes free." It was as if a piece of the old 800 had crawled into my ST in the middle of the night.

I was only expecting a severely-truncated BASIC vocabulary, perhaps some miniature form of procedural editor which directed sprite movement or set the bonuses for a game. I was not expecting a real BASIC; after all, the word "Basic" itself appeared only once on the entire STOS package—on the back, in small print. So for me, the surprise was a pleasant one; although it later dawned on me that the grin on my face might not be shared by others who paid the thousand or so dollars for their STs that they may be relieved from having to operate command-line systems. Not only does STOS have no GEM features, it has no GEM anything. Once STOS kicks in, GEM is virtually banished to the corner of a cold ROM chip.

The apparent objective of STOS' authors, Lionet and Sotiropoulos, was to create a programming environment whose overall theme is based upon those machines familiar to long-time Atari enthusiasts, though modernized about a decade into the present, as if the ST were an upgrade to the old 800. You may remember the reviews from some Atari-dedicated magazines just after the ST's public release in the U.S. in mid-1985, stating they felt the corporation was abandoning the old computing methodology which it (read: Jay Miner) originated, and had succumbed to the winds of conservatism and packaged, patterned software. Notice how rarely one reads such comments today.

Nonetheless, STOS must've been concocted with a fair degree of liberalist revenge; the package does depict Baron von Frankenstein (Basil Rathbone) unleashing joysticks and animated sprites upon the world, while the

STOS Basic Head-to-Head

BENCHMARK	GFA 3	Softworks	STOS
Ahl's Simple	:02.39	:18.2	:44.4
accuracy	.0000000170330167753	.000003	0.00000000 (?)
random	7.5888338	12.3808	3.75
The Sieve	19:42.	36:55.	40:31.
Savage	3:19.2	(33:+))	(45:+))

CHART FOR COMPUTER SHOPPER BY D. F. SCOTT

manual's introduction touts STOS as being "much faster than any other BASIC on the ST," while removing "many of the restraints caused by the use of GEM." Keep those words in mind, if you will, as we step into the time machine, and remember an era when every dream had its parameters, every objective its shadow memory address.

Give My Creation—Li-i-ife!!

The main goal of STOS is to give new programmers access to the advanced visual effects features a professional game developer creates on her own, generally from scratch. The secondary goal appears to be to bring programmers back on-board the computing bandwagon, who had abandoned it at about the time menu bars started creeping onto computer screens with the speed of mice overrunning an Australian barn. It will be easy for the ST user to recognize the differences in operation between STOS and TOS, as she comes across them in this article; but for those who weren't with us at the time the disk drive in and of itself was a wonder to behold, it will be necessary to fill them in a bit about what they missed, so we may draw parallels between STOS and the old ways, that were never handed down to this generation of programmers—perhaps with good reason.

The ST's dissimilar predecessor, the Atari 400/800, contained built-in provisions for bit-plane manipulation and multiple leveling. The smaller bit-planes later came to be known as "sprites," although that term was coined by the designers of the Commodore 64. Sprites, back in the 70s, were one-color planes since they were represented in memory binarily. Ones (1s) told the system where the sprite was, zeros (0s) where it was not. A row of eight such bits was condensed into one two-digit hexadecimal number (four bits per digit); so on my old 800, creating a sprite was a matter of POKE-ing into memory eight hex numbers which would map the sprite's shape, then POKE in its col-

or, and memory column location for its Y-coordinate—since the sprite map would appear on the screen as a vertical ribbon—and its memory offset for the X-coordinate.

In my 800 days, I would create my sprites on graph paper first, then rule the graphs into groups of four squares horizontally to obtain the appearance of a four-digit binary number. I memorized the hex digit for each group—there were only 16, so it wasn't that difficult. STOS does offer a simpler method of sprite creation than referring to personal memory: direct drawing to the screen.

STOS, you see, has its own form of memory-resident accessory which, incredible though it may seem, is really a BASIC program whose file-extension is merely renamed from .BAS to .ACB (a further discussion of accessory logistics is to come). One such accessory is the sprite definition program, which is totally icon-driven and in no way presents the appearance of being written in an interpreted BASIC. Although the icons themselves can appear somewhat esoteric—one from the main screen looks to me like a floppy disk being torn to shreds by a maniacal wheelchair carrying a large box bearing the symbol of the "Gor" spell from DungeonMaster—the program does effectively demonstrate the capabilities of STOS' substitute for the GEM AES. There are several dozen rectangular mouse pointer selection zones in force at any one time, within and including the menu block, the palette, the drawing window, magnification window, and the sprite selection window.

With all these zones in effect, interpreting which one was chosen is a little slow, but not unbearable; and the sprite creation accessory most likely uses more icon selections than the average game would ever dare to use.

On the other hand, zone definition is dynamic and transparent to the user; so an invisible or unmarked zone on the screen may be an active one, triggering some sub-routine. Some fine examples of transparent zoning may be

found in DungeonMaster; but it is doubtful, unfortunately, that a game of that caliber and speed could be programmed under STOS.

As one might expect, STOS sprites have as many colors as there are available in their respective graphics resolutions—which means, for low-res, sixteen—as well as optional multiple frames for cel-animation sequences. This way, if your game requires purple rock monsters with green eyes bludgeoning sea tortoises with rubber chickens, you can draw the ghastly deed frame-by-frame. For the convenience of the program being edited, all sprites to be used in that program, whether they be stills or cel-animated frames, are constructed within the same sequence, and given reference numbers which can be accessed by the BASIC program. After selecting the "Quit & Grab" box—once you find it—the completed sequence is then "grabbed" by the program, and converted into data instantly—accessible through the source code. The BASIC vocabulary contains no provisions for the actual definition of the sprites; it assumes them to be pre-existing, created by the sprite design accessory, and perhaps saved to disk.

The musical score for a program can also be written using another memory-resident BASIC accessory; and all of this external data is saved in condensed form within the tokenized program file itself—not unlike the way a Macintosh saves its visual and aural resource data in the same file as the program to which they belong. STOS resource data may also be saved externally, for archival records, in "banks" which can be recalled later via the command line or by the program.

30 IF MARKET=RIGHT THEN GOSUB 1979

The commands and functions used to port the sprites over from drawing board to application are indicative of the mood and flavor of the rest of the STOS BASIC language. Picture, if you will, a BASIC of the old genre, with line numbers, multiple GOTO statements, and colons separating phrases. If you were to enter a BASIC phrase without giving it a line number, the parser would assume you are giving the system a direct order, and execute it immediately. I call this genre Old Microsoft Dialect, after the language systems that company created during the latter half of the 1970s—namely, AppleSoft BASIC and TRS-80 Disk BASIC.

Within such a dialect, there were no provisions for what we now call parameter-passing, or transferring a set of representative data from one function to another. Current programmers, even of modern dialects, consider parameter-passing the order of the day. The reason this programming tactic is so common now is due to the metamorphosis, over the last decade, of the functional model from the style of a NASA rocket systems examination checklist to that of a for-

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THE EASY-DRAW SYSTEM FOR ATARI ST

Reviewed by John Nagy

Easy-Draw was one of the first major applications available for the Atari ST, and it remains one of the most versatile today through many upgrades and add-on tools. Primarily a drafting and drawing program, Easy-Draw from Migraph, Inc. was first released in February 1986 and was one of the ST's first fully GEM-controlled products.

Since then, Migraph has added many features to make Easy-Draw 2.3 a remarkable package that allows unparalleled power in drawing, drafting, designing logos, page design, and display advertising layout. Available accessories include The Supercharger (for incorporating and editing most image formats into Easy-Draw pages), the

Easy-Tools Drawing Accessory (for measuring, rotating, and advanced manipulation of Easy-Draw objects), and many sets of art disks and printer drivers for 9 and 24 pin printers, Desk-jets, and laser printers. Additionally, a new package called Touch-Up, allowing total manipulation of bit-images is being shipped now, and should be available for review by next month. While Easy-Draw itself as well as Easy-Tools may be used on a 520ST, the Supercharger and Touch-Up requires at least 1MB of RAM and a double sided disk drive (or hard drive), and the art packages require a double sided drive.

I talked with Migraph's Liz Mitchell, and she was also very excited about the IBM versions of their products that are due out shortly. GEM-equipped IBM

and clone-owners will soon be offered much of the power of the ST version of Migraph's products, with several art packages already released on dually-usable IBM/ST disks. This versatility is certain to mean a rapidly growing library of art and applications, important to ST owners who are afraid of potential desertion by some software companies.

In addition to powerful drawing functions, Easy-Draw includes text functions like multiple font and point sizes, loading ASCII text files, breaking and continuing text blocks, and more. These make Easy-Draw almost a desktop publishing package. Although you can use it for that with ease and success, the package is clearly more for layout and drafting of single documents—but they need not be simple. Over twelve thousand "objects" can make up a single page within 1MB of RAM, and each one can be individually sized, stretched, and moved.

It is "object" orientation that makes Easy-Draw uniquely powerful. Using the GEM standards for a "phantom" resolution far exceeding any printing device, objects loaded or drawn in Easy-Draw can be rescaled to extremes without getting "blocky" or "jaggy" like normal bit-images. Objects in GEM format exist as mathematical points in space, and the lines fill in on command to match the scale and output device. Layer as many objects as you like to make complex images, then group them and add more to them, save the pieces or the whole page, and work more on it later. The really amazing thing about object-oriented art in the very professional packages offered by Migraph is that you can take them apart, then take

the parts apart, and use any piece you want. One of the most dramatic is a computer, seen from a 3/4 view above. In this single object there are hundreds of pieces—each key is even made of three or more separate objects.

I don't consider myself to have any artistic talent, but I do know what I like to see. No drawing program ever caught my interest because I knew myself to be a coloring book dropout. But Easy-Draw changed my mind, and quickly. I needed to create flyers for a local computer show sponsored by my Atari Club, and simple text wasn't going to cut it. I strapped myself to the keyboard, prepared to fight my way to an adequate "printshopish" poster, and learn something about the previously unopened Easy-Draw package along the way.

What happened instead was hours of pure enjoyment (after 45 minutes of frustration while the Easy-Draw concepts soaked in). By 5 A.M. I realized that I had learned a lot and was thoroughly impressed, but I still didn't have a flyer. In the next 30 minutes I created an impressive multi-font and graphic windshield flyer that I still can't believe came from my hands. Full page commercial quality ad layout is now a snap, and I have had offers from my printer to do layout for some of their customers.

Figure 1 shows the work surface of Easy-Draw with several objects selected, showing the sheet-like frame that surrounds any object you are currently operating on. Grab any tab along the edge of the selected item, and you can either scale or stretch the object. Repositioning any object is as easy as

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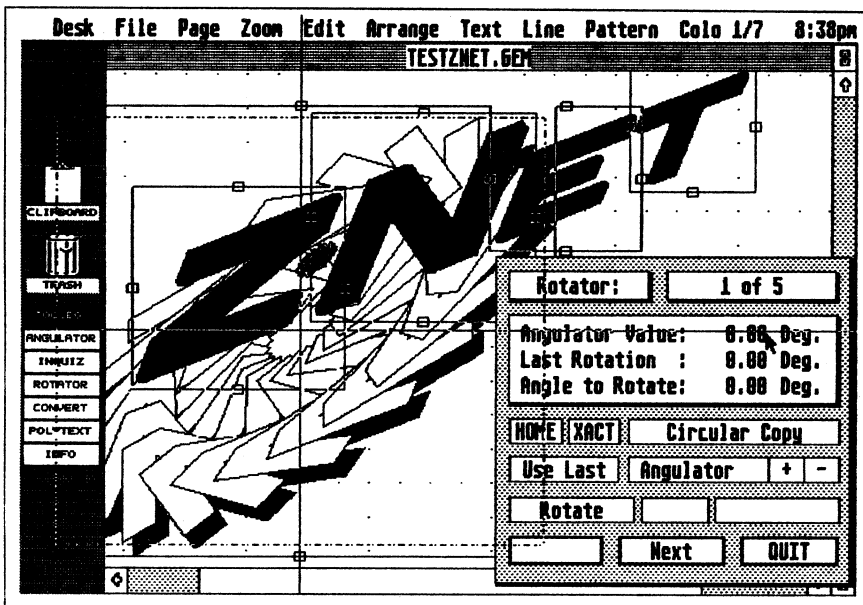


Figure 1

TETRA QUEST

Reviewed by Frank Nagy

Tetra Quest combines the best of treasure quests, puzzling mazes and shoot-em ups.

Each screen presents new challenges and peculiar dangers to your Runner/Phoenix. That alone is saying a lot since the game boasts of 384 sections of 96 quadrants (or levels) made up of 4 screens each.

If you hesitate starting the game, a fascinating demo mode auto boots to randomly show various sections. In this mode you can move and fire your Runner for a few second sampling of each sector before another is accessed by the computer.

Avoid the alien Spitters that spew out all sorts of attackers from acid to glue and paint blobs. Each level contains a hidden puzzle to be cracked. How to get each of the "Phoenix coins" in correct order while preserving lives of your men and conserving precious "Phoenix power" is the challenge.

You control the power to transform your Runner into that fiery bird to fly across chasms to other unconnected pipes. But remember, you only have so much power to do so. When you can, use the Tetra-dome's own teleporters or you may not have enough strength to finish your quest.

New hazards are presented in the varied crisscrossing paths. You can only shoot on these straight lines unless you destroy a Deflector in a strategic position helpful to re-direct your shots. This can be an advantage or disadvantage depending upon how they are placed in the path of various other aliens on their seek and destroy mission.

Some of the aliens will destroy your runner instantly upon contact while others merely temporarily hamper its' action. The glue blob will momentarily hold you up, while the oil-slick gives a nasty spin-out and the paint blob provides a trail to help other aliens track you. A precious few seem to be totally harmless.

Stay in one section too long and the acid blobs will disintegrate parts of the maze right out from under you.

This game made my wife, Sally, a gaming junkie overnight. She's never been that enamored of computer games until now. She's already working her way through the difficulties of the second level.

"If I can just zap enough of these Tetroids, then trade points for "Phoenix power," transform my runner to a "Phoenix" and fly over..."

She gets further and further with it each time she plays, while I have hardly cracked the second level before my last man is blown to smithereens.

"I've got 5 men left to assault the second level..."

My major problem and complaint with any such game has always been that I usually just can't stay alive long enough. (That's one of the main reasons my favorite shoot-em up game is Star-

raiders 2, where you can't get blown away on one hit.)

I cast my vote for MichTron to upgrade this game with a way to buy more Runners for those of us with slower reflexes. I'd also like to have an option that would allow a player to select a different quadrant at start up. This can make it a new game every time you play it. I'm afraid the way it stands now, I'm going to wear a hole in the first two screens of the disk.

Sally wanted me to tell you she's been too busy to work on this review with me, but if the truth be told she's been having too much fun playing this game to sit down to write a review on it.

"Oh no, I'm out of points to trade and I can't land..."

This hot, new, fast-moving arcade game for the Atari ST and Commodore Amiga has been released by MichTron/MicroDeal.

This review is based on tests of the ST version.

Tetra Quest lists for \$39.95. ●

ATARI ST ATARI ST ATARI ST ATARI ST ATARI ST ATARI ST ATARI ST

MEGATOUCH MAKES KEYBOARD FEEL LIKE A MEGA

Reviewed by William Travillian

I have one of the original Atari 520STs. And my biggest complaint about the computer has been the keyboard response. The touch is far too light for me. Because of this, I am always typing unwanted j's and k's due to the weight of my fingers on the keyboard. So, when I read about MegaTouch in E. Arthur Brown Company's brochure, I quickly plopped down the \$11.95 plus postage and handling to try to correct the problem.

In about three weeks after I mailed my order, the UPS man delivered to my front door the MegaTouch kit which consisted of 85 small, tapered, silicon steel springs to be placed under the keycaps. And, unfortunately, no instructions as to how to install them. I counted 84 keybuttons on my Atari ST and figured they gave me one extra spring just in case I ruined one. As it turned out, the return key has two posts, so I placed two springs under this keycap. I guess they figure if you are smart enough to try to pry up the keycap, you can figure out the rest.

Having practically no mechanical skills, I found the idea of popping off keycaps about as intimidating as pulling teeth. But the process was really quite simple. And after removing a few

keycaps, I was convinced anyone could do it. As an added precaution so that I wouldn't take a chance on scratching the case, and to provide easier access to the keyboard, I removed the top cover. This I did by removing the six Phillips-head screws on the bottom of the computer after I had unhooked all the cables, then just lift off the top cover. Be careful when replacing the screws. The long ones go in back, the short in front. The other way will damage the case.

The first step was to disentangle and lay out the springs because many of them had become tangled in the package. Then using a small flat-bladed screwdriver, to pry underneath the keybutton and my index finger to force the pressure up rather than back, the keybuttons snapped right off. The procedure becomes pop off a keybutton, drop in a spring, snap the keybutton on. Completing one row at a time makes it easier not to get confused as to which springs have and which have not been installed.

After comparing notes with someone who bought his MegaTouch kit directly from Regent Software, I learned that Regent Software did provide instructions with their kit. And according to the instructions, the small end of the tapered spring is supposed to face down

and the larger end is supposed to face the keybutton. However, not having had the instructions, the most logical installation was with the large end down and the small end up. Making the installation with the small end down requires that the spring be forced over the key post with a screwdriver. It is a tight fit, but it does work like this.

The only difference in the result of the installation as I did it is that the touch is slightly lighter, but the key response is still firm and clean. And this installation suited me just fine.

Another point I missed by not having the instructions was that I figured that because there were enough springs to go under every keybutton on the keyboard, then every keybutton should get a spring. According to the instructions, springs are not to be placed under the left shift key, the return key and the space bar because they are more complicated to remove.

Removing and replacing these keys did provide me with a little more angst. But after observing how these keybuttons were fastened to the keyboard, I managed to remove them fairly simply. The left-shift key and the return have to be pushed forward as well as up to avoid pulling loose the other mechanisms attached to them. For the space bar, pry the attaching rod out

of the mounting bracket with the same small screwdriver and lift up. Simple. But in order to place the springs under these troublesome keys, it is necessary to remove the top cover. However, the improvement in the touch of these keys makes the effort worth it.

The whole installation took me around half an hour. And that was with me taking my time to observe how each part fit together and to inspect each spring before dropping it onto the post.

As for my feelings about the value of the installation: I am so enthusiastic about the result, people will think I own stock in the company. Unfortunately I don't. My keybounce problems have disappeared making it possible for me to type faster and with more accuracy. What took you guys so long to develop the kit? Now if you could only develop another kit to correct some of my typing problems.

MegaTouch is available by mail order from E. Arthur Brown Company, 3404 Pawnee Drive, Alexandria, MN, 56308 or directly from Regent Software dealers. The price is the same \$11.95, but with E. Arthur Brown there is the additional \$2.50 charge for shipping and handling. Mr. Brown's company is great to work with if you can't buy the kit locally. ●

► STOS: OLD BOTTLES FOR NEW WINE

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mal Cartesian geometric proof. Instead of visualizing the program as the verbal equivalent of switches being toggled and dials being turned, the current model sees the program as representative of its own result or product—moreover, as a functional description of the solution to a compound equation.

So in the act of retrogressing to the environment of STOS—to put it in blunt terms—we in effect dust off those old switches and dials and experiment once again with our old toy. The trouble is, the games we are used to playing are more configurative, more geometric, and less like toying with a radio-controlled plastic car. The representational differences between "Star Trek" on a '69 model PDP-8 and Starglider II on the ST are directly proportional, in an interpretive sense, to the differences between the old and new dialects of all forms of programming.

Now, with that in mind, let's return to our sprites. After having defined the form of the sprite with the accessory, or loaded it from a disk-based .MBK bank file, the command SPRITE is used, appropriately, to call it into existence on the screen. The command has four parameters, the first of which gives it a handle for access throughout the program. The second and third give it an initial set of coordinates, and the fourth is a reference to the frame

number given the sprite by the designer program.

Moving this sprite about the screen is a matter of establishing a vector for it and setting it forth. This vector is constructed of two sets of three integers, for movement along the horizontal and vertical axes, respectively. Each set denotes the frame step speed in fiftieths of a second, the number of pixels to move per step, and the number of steps—if you can imagine this extra step—per movement, in that order. At a time like this, it would be nice to have available to us some of that newfangled parameter-passing; yet how soon we forget that we're stuck with the programming model of the last decade.

Putting our eight-year-old thinking caps back on, let's see how BASIC programmer extraordinaires of the old genre would've tackled this problem: One of the frequent tools of early programmers—the virtual equivalent of stone knives and wooden spears—was the memory map. The "bible" of 8-bit Atari programmers was Ian Chadwick's Mapping the Atari—which was really a 150-page memory map. The way Jay Miner designed the 400/800, a garden of memory addresses would be reserved for values representing the status of particular facets of the system. Paging through Chadwick at random, we would discover the color of the foremost background level—called "playfield zero"—is memory address 53270.

If we wanted to make playfield zero all black, all we'd need to do is POKE the value of black into 53270—in this case, "POKE 53270, 0."

In the same fashion, we would POKE the horizontal position of "player 0" into location 53248; and if we were heavy followers of Chadwick, we used his machine-language "USR" routine to evaluate its vertical position. When we wanted to move the player/sprite, all we'd need to do is increment or decrement the x/y position variables, and re-POKE them in. The key word in the previous sentence is "position;" as far as movement was concerned, we could declare two integer variables and name them whatever we so chose. Then, for a horizontal position change, we could say, "XPOS = XPOS + XINC : POKE 53248, XPOS."

By contrast, STOS BASIC focuses on movement vectors—and as any scholar of geometry knows, vectors are functions. So the STOS programmer would not establish position variables for her sprite at first; instead she would give the STOS MOVE X and MOVE Y commands sets of parameters for vectorialization. In other words, she would tell the sprite, "Start here, and go this way"—STOS takes it from there, moving the sprite thataway indefinitely. If the path is to reverse itself repeatedly, STOS will gladly scoot the sprite around the screen until time immemorial, even if there is no formal

program running. If the programmer wanted to know where her sprite was, then she would consult the system global variables X SPRITE and Y SPRITE.

So once the sprite is on its merry way, the job of graphic maintenance for the programmer is extraordinarily easy. Movement is tremendously smooth and fast if necessary, no matter how busy the rest of the system seems to be at the time. What is unique—or more appropriately, odd—about the system of object movement is the method of rendering the vectors unto the command: STOS asks the programmer to place the parameters within a string or string variable. This method of substitute-parameter passing is about as confusing to me as auto insurance.

Assume the programmer would be representing her vectors as numbers (most people think in terms of numbers nowadays), and wanted complete freedom of sprite position and movement, dependent upon the conditions of the game at any one time. She would have to use the BASIC function STR\$ to convert her numbers into strings, then be sure to ordinate her string so that the opening parenthesis comes first, followed by the speed variable string, then a comma and the step variable string—and so on until she adds the final closing parenthesis—which, for all you trivia buffs, is also known as CHR\$(41).

So why, if our intent is to move an

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► STOS: OLD BOTTLES FOR NEW WINE

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object about the screen, are we plowing through our old files in search of an ASCII character table? As long as we have to use commands as long as

MOVE X 1, "(1,3,25)(1,-3,25)I"

then why the quotation marks and the parentheses? The parameter format without the parentheses would be understandable—even commendable—but by making a string of it, the programmer is forced to convert her data into alphanumeric format. In other words, the format (a,b,c)(d,e,f) is now impossible; it must instead be, quite literally:

("+a\$+","+b\$+","+c\$+")
("+d\$+","+e\$+","+f\$+")

This method of command dictation is certainly unconventional, both by the standards of the old genre and modern programming; and some current languages have no parallel or even vaguely similar method of parameter-passing, learning to use STOS' sprite system cannot possibly be giving the novice an education in modern logistic techniques. STOS therefore exists in its own little world—which is all well and good if all the programmer ever aspires to do is pass away the time constructing needlessly complex puzzles for himself.

Concern For Our Environment

Up to 16 programs may inhabit the STOS environment—twelve accessories and four editable programs. The 340-keyword vocabulary of the BASIC system actually does provide commands for establishing and maintaining a GEM-style menu, although the STOS substitute is obviously much slower than its more silicon-based counterpart. Since I've yet to run across a truly impressive action-filled game which used the GEM menu bar, I'm not going to complain too much about the STOS menu bar. If you need it, at least it's there.

The main editor screen, as I've mentioned before, is based upon the old-style BASIC terminals. Entering a BASIC command phrase without a line number results in that phrase immediately being executed; otherwise, the numbered line is inserted into the ongoing program in the order of its execution. The editor screen can be split into as many as four smaller windows with fixed positions—in this case, two 38x9 and two 38x8 small terminal windows. Since there are no window-manipulation buttons—just borderlines—excessively long BASIC phrases automatically wrap around to the next line. At the top of the screen is a GFA-style menu bar displaying 20 frequently used direct BASIC commands that may be executed. Each command listed has its function key counterpart; and F1 always serves as a "repeat last command" key.

Like the old Hewlett-Packard 3000-series computers, STOS distinguishes between its alphanumeric and bit-plane graphic screens—the terminal editor screen is entirely character-based. Its

borderlines are formed from having redefined the Hebrew portion of the ST character set into border-frame characters—remember the old control-characters on the Atari 8-bit keyboard? Any graphic objects placed on the screen, such as sprites or the mouse pointer, remain unaffected even if the terminal characters are forced to scroll upward.

Furthermore, STOS differentiates between the screen being viewed and other invisible screens being placed and manipulated elsewhere in memory. When you look at your computer screen, you are staring directly at the contents of a particular region of memory reserved for the screen; of course, this is true for any computer.

Time was, we could put a dot on our screen somewhere by adding up in our minds just what memory address corresponded to that particular somewhere, and POKE that address with a color value. Horizontal lines were easy; we simply created a FOR-NEXT variable loop with starting and ending values at the endpoint addresses of our line, and POKEd the address pointed to by the variable. For vertical lines, we simply changed the STEP value of our loop; since the screen scanned from left to right and then down one line like reading a book, we counted the number of pixels scanned to the right and down until we reached the point directly underneath the last—for highest-resolution, STEP 320—and then POKEd this value. You could then imagine STEP 319 resulting in a 45-degree diagonal line heading left, and STEP 321 heading right.

Why were we using POKEs instead of the obviously simpler PLOT x1,y1, TO x2,y2 command? POKE commands allowed us to draw a screen image—before anyone actually saw it, only to some other area of reserved memory that the computer didn't know we were going to make into a visible screen. Since the computer wasn't PLOTting as we were drawing the screen, composing the image actually took the program less time. To make the computer show our POKEd creation to the world, all we needed to do was give the screen memory pointer the address of our new screen.

This technique is still quite common today, especially in those games with the smoothest frame-redraw like Carrier Command and Starglider II. STOS was thoughtful enough to remember that screen-flipping is an important technique for a game programmer to learn. STOS retains the origin memory address of the physical screen—the one you're looking at—in the global variable PHYSIC.

The screen being manipulated by plotting commands has its origin address in the global variable LOGIC. The chosen names aren't very self-explanatory, but they are sufficient. LOGIC always starts out being equal to PHYSIC until the programmer states otherwise. Resetting the value of

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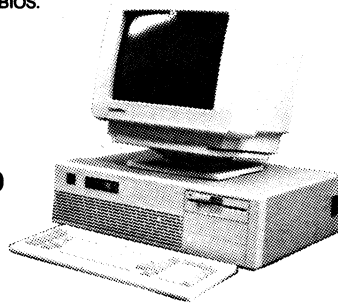
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LOGIC causes all screen updating, including regular drawing commands as well as character input, to take place someplace else in memory; for the meantime, the physical screen is frozen. Setting LOGIC = PHYSIC, or using the command SCREEN SWAP for trading places, forces the screen under the table to appear in the blink of an eye.

Those of you who preferred the old numeric way of resetting memory pointers with the POKE key won't find many PEEKs and POKEs in this system. The fault isn't STOS' but the ST's; with GEM on-board, there didn't appear to be any need for that many user-manipulable system variables such as there were with the old 800. Programmers who thought computers were constructed from a concrete paste whose base was resettable memory pointers, were disappointed to discover the ST's list of system variables was only eight pages long; and playing with them too haphazardly might wreak enough havoc to cause dams to break in the next town.

To Be Accurate Is To Be Wrong

Since STOS BASIC qualifies fully as a BASIC language, despite what it says—or doesn't say—on the package, we felt it only fair to give it some of our now-familiar benchmark tests—namely, David Ahl's Simple Benchmark, the infamous Sieve of Eratosthenes, and Byte's Savage floating-point math test. Given, STOS bills itself primarily as a graphics and music manipulation system, saying nothing at all about arithmetic or (gasp!) trigonometry. Still, since this is indeed a BASIC, it has to play ball, as it were, with the big boys.

In the interest of fairness, our chart shows the comparative speeds and accuracy of STOS BASIC compared to other interpreted (i.e., non-compiled) BASICs: GFA 3 and Softworks BASIC—one of the first third-party runtime interpreters for the ST, and one which used optional line-numbering and colon-separation of statements. Our three tests had little or nothing to do with those visual and aural features STOS claims to be the master of; nonetheless we must admit the test results were somewhat dismal.

Although it took STOS BASIC eighteen-and-a-half times longer than GFA 3 to complete the Ahl test, STOS registered an accuracy of zero—in other words, perfection. Nothing—not even a Cray supercomputer—registers an accuracy of zero; so does this mean STOS is the most accurate interpreter designed, or is there a trick somewhere we haven't seen yet?

Most likely, the latter is the true answer. The square root of 2 is an in-calculable number; but we do know that the square of the square root of 2 is 2. We know it, but a computer does not. It can only calculate the square root of any number, integer or otherwise, to a prescribed number of decimal

points—generally about 16, sometimes 8. So as close as a computer can possibly come to deriving the real square root of 2, logically speaking, its result must be wrong since it is not complete. Therefore, that wrong result, once squared, cannot be 2.

In other words, for a computer to be right, it must be wrong—not very wrong, but slightly wrong. The slighter, the better. Ahl takes the first 100 integers, square roots them 10 times, and squares them back 10 times. The amount of wrongness, or deviation from the true result, for each equation is summed and computed as the accuracy rating. As we said, when that rating is zero, something is wrong; and sure enough, we found out what it was: Whenever a decimal value that could be figured to the ninth decimal place or beyond is rendered unto a floating-point variable, STOS rounds it to the nearest integer—in this case, zero. So we will never know just how accurate the Ahl test really was; but we do know that, at worst, it was accurate to at least the ninth decimal place—which was better than either competitor in our test.

The Sieve utilizes the well-known procedure for deriving the first 1900 prime integers from an array of 8191, 100 times. The only objective here is speed; and here again, STOS falls short of perfection, showing a close third to old Softworks. The 25000-iteration Savage test, likewise, went so slowly that we gave up on it—as we did with Softworks, by the way—but by our figures at stop-time, STOS may have taken 45 minutes to complete, or 12 minutes longer than we estimated for Softworks. GFA 3 needed only two minutes.

For just under fifty bucks, STOS is a bountiful package with a real BASIC—albeit a slow one—three free working games (two of which actually work), and a substitute operating system that will make 8-bit computer users very happy indeed. On the other hand, had STOS been distributed as the real operating system of the ST back in '85, the computer would've been declared defective, and the Tramiels' worst blunder since the Commodore Plus-4. For instance, STOS doesn't recognize the hardware bug (which may be only akin to the U.S. models, I admit) that makes a double-sided disk read the wrong sector for its directory, or not know when its disk was changed. Instead, STOS merely amputates the logical drive at fault, thus creating an infection, if you will, which forces the entire system over time to be incapable of communicating with the outside peripheral world.

Yet STOS' capability in the category of graphic manipulation is clearly superior to GFA's or any other BASIC's, despite the parameter entry enigma. One of the games supplied with STOS—called Orbit, a derivative of the classic Arkanoid—actually has a faster ball and paddle than the real Arkanoid

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clicking and dragging. All normal drawing functions (box, circle, fill, connect lines, and lots more) are available. Although designed primarily for monochrome output, you can create four color images on a color monitor (difficult to see in monochrome!), and you can manually select and print each color for full color separation print work, or do single separations for color overlays. Multiple line weights, fill designs, and a dramatic shadow effect are also included. Any object can be selected and forced to take on new attributes (color, weight, transparency, etc.).

Text can also be any color, and can be "poured" in from an ASCII file or

typed in. Justification, centering, underline, bold, outline, italic, multiple point size, it's all there. Using standard GDOS fonts, Easy-Draw can share fonts with any GDOS application. Best of all, objects prepared with Easy-Draw can be loaded into all the good desktop publishing packages. This is important because Easy-Draw lacks the multiple page text handling power of an application designed around words instead of objects.

Figure 1 also shows one of the accessories in the Easy-Tools package. The Rotator dialog box you see there is waiting to spin or circular copy any selected object by 1/100th degree increments. Another tool (the Angulator)

gives an on-screen angle and measurement device to set desired angles precisely.

Figure 2 shows a sample of the output of Easy-Draw. Keep in mind that these very good quality images came out of my 9-pin printer. From a laser printer, the smoothness and resolution are astounding. You can see how a simple form (a hand-drawn letter "Z," done with the help of magnetic grid points) was circular copied into a spiral, then filled and flipped, more letters drawn, then rotated, stretched, shadowed, and in no time, a professional quality logo emerges. This one, Z*Net, is for a new

project of Ron Kovacs, editor of the ZMagazines for Atari News.

The circular copy need not be circular either—you have complete control over angle, repetition, and distance from starting point for each copy, allowing it to be used for layered zoom effects or anything you can conceive. Other parts of the Easy-Tools allow "polytext" to be angled, rotated, and circular copied.

Polytext is different in this way from standard GDOS font text, which cannot be scaled, stretched, or rotated like objects. This is the single biggest shortcoming of Easy-Draw, as complete

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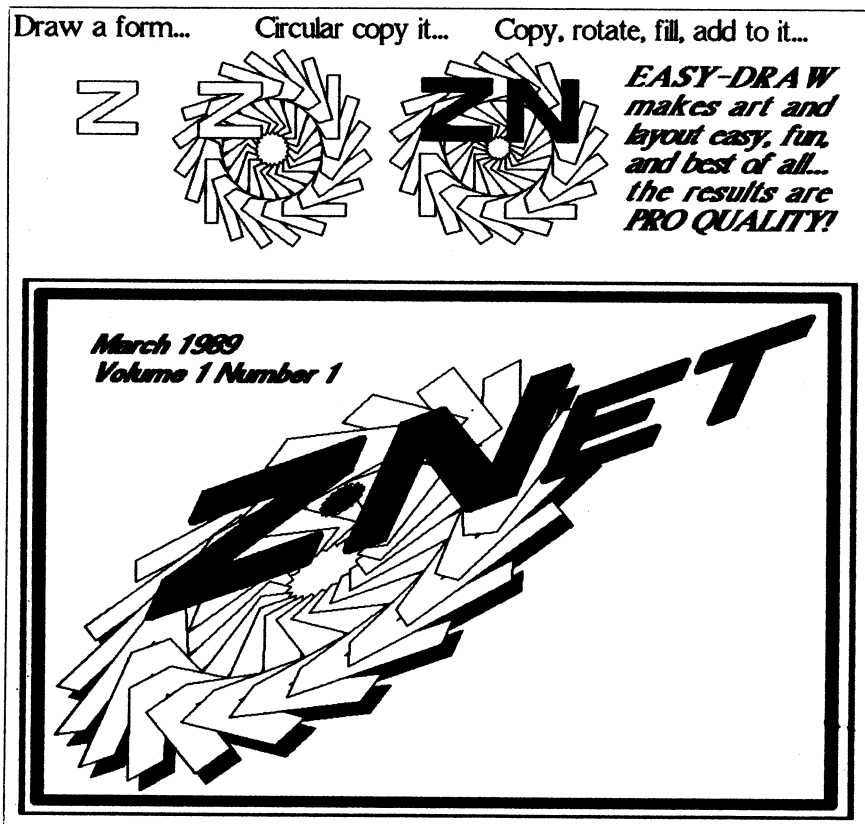


Figure 2

► STOS: OLD BOTTLES FOR NEW WINE

from page 445

game by Taito; and we're talking about a BASIC! Orbit also comes with a wave creation system—as do the other two games supplied—which lets even a novice set up his own brick patterns, save them to disk, and play them in his own game. Alas, this feature too is susceptible to forcing a "Subscript out of range" error when too many special-purpose bricks are drawn in; and what novice is going to want to see his first attempt at customization result in such an error?

The package does come with a tremendous manual to explain just what these errors are; I learned how to program in BASIC by correcting other people's errors. The manual does confuse functions with commands, though; but besides that, the grammar is correct and non-insulting to one's intellect. Stephen Hill and Alan McLachlan are to be

commended for writing one of the few readable ST programmers' manuals.

If you still have some fond memories of programming in the early days (if it seems like yesterday, that's because it was) then STOS will put a few smiles on your face. Be prepared, however, to become reacquainted—like one of those '80s resurrections of '60s spy shows—with some familiar foes from the past. Nostalgia is not always a glorious occupation; for in glancing back at where we were then, we set ourselves on a collision course with those hindrances and near-failures we had to overcome once already, in order to get to where we are now.

STOS: The Game Creator by Francois Lionet and Constantin Sotiropoulos
Jawx Software for Mandarin Software, Europa House, Adlington Park, Adlington, Macclesfield SK 10 4NP UK
\$49.95 U.S. suggested retail price. ●

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logoboxes such as that in Figure 2 can be created as a single object, but cannot be micro-adjusted later in a document without throwing the text out of scale. Using polytext would resolve the problem, but the polytext fonts are less than exciting looking. Curiously, some desktop publishing packages like PageStream will allow rotation of text, but not of objects. Overall, the different handling of text and objects is sometimes frustrating but is not a handicap. Fonts can indeed be resized by point values, but you may find them no longer fitting in the box you made for them. I am told that Touch-Up will provide more powerful ways to mix text and graphics.

Another (trivial) improvement I would like to see would be better control of the Shadow function. As it is, all shadows are the same distance from the object, as though every object is the same height above the background, with a 3/4 left and above illumination. Consequently, a shadow on a small object is more pronounced than on the same object scaled up. However, there are ways to create a shadow manually, and Touch-Up is said to have the specific shadow controls I would prefer.

The Supercharger is a utility to convert bit-image illustrations compatible with Easy-Draw out of almost any standard format picture file. Neochrome, Degas, IMG, MacPaint, each can be converted and "mapped" to monochrome with user control of mapping density and patterns. Parts or all of the resulting conversions can then easily be used in Easy-Draw or publishing packages.

I found the manuals to be very well done and helpful, although some situations arose where I had to go it alone. One was when I tried repeatedly to use the Supercharger's Auto-mapping 4x4 without any response. I finally figured out that I had one too many desk accessory loaded, and insufficient memory to allow that function, but no clue was given by the program or manual.

Packaging of the Easy-Draw programs is well done, with a classy binder big enough to handle all the documentation of all the packages. However, the 3/4 format page size is not consistent across the many art packages Migraph offers, making it hard to keep all your papers in one place. I ended up making reduced copies of the documentation that was oversized so that it would fit together. Liz tells me this is because the IBM users don't have a binder, and loose pages with holes would be a problem for them. Another packaging mystery is why do some of the disks come in a plastic book-like folder and others in a box? It is almost impossible for me to bring myself to throw away the folders, but they are terribly impractical to store the software in. I hope the box is the way of the future, it looks much cheaper to produce and causes no "collecting" emotions in me, yet looks just as attractive in the store.

I heartily recommend the entire Easy-Draw system to anyone that needs to produce ads, flyers, programs, pages, drafting, or just for lots of drawing fun. The results are super, professional, and fast. I am looking forward to trying

Touch-Up, a graphic page and object editor with a myriad of features, just now being released as a companion to Easy-Draw.

Easy-Draw retails for \$99.95, or \$149.95 with the Supercharger. The

Supercharger alone is \$49.95 and since it may require you to upgrade older Easy-Draw versions, is available separately only from Migraph. Easy-Tools runs \$49.95. Scan-Art is a (big!) set of casual and lively bit-images

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SUPER ATARI

by Mike Charnley Fisher

(From: *Computer Shopper U.K.*)

The ATW (or Abaq) is a high performance, low cost graphics workstation. Its claim to fame lies in the fact that it uses the INMOS T800 transputer as a central processor. As you should

all know by now, the T800 is a 32-bit processor rated at 10Mips/1.5MFlops, i.e. very fast compared with Intel/Motorola offerings. The unique feature of the transputer family of processors is that they have built-in serial communication channels, each of which is able to operate at about 2.5MB/sec concurrently with the CPU (and onboard floating point unit). The T800 has four such "links" and this makes it ideally suited to parallel processing applications. Internally, the ATW is able to hold 13 of these (along with anything up to 64MB of memory—using 4Mbit chips) and, through two buffered "links" can address any number externally. This

gives the ATW the capability of being a 130Mip supercomputer in its own right as well as the ability to act as a gateway to even more powerful boxes such as Perihelion's Polyhedra (480-Mips +). To put all this in perspective the Cray YMP supercomputer is rated at 1000Mips (on a L/mip basis it is an order of magnitude more expensive).

However, the new technology lying in the ATW is not limited to the transputer. A graphics blitter, now named Blossom, helps the ATW drive 4 graphics display modes at very respectable speeds (see Figure 1).

On entry level machines, to allow for these resolutions, there is a dedicated MB of dual ported Video RAM and 4MB of user RAM. Along with hardware to support a SCSI interface (giving access to a wide range of hard/optical disks and tape drives), a built-in 40MB hard disk, and of course the Motorola 68000 based I/O controller (in the form of a modified Mega ST board) the ATW represents remarkable value for the money at about \$2,500.

The machine on which this article is based is an early "Issue 3" machine fitted with a Rodime 3.5" 130MB SCSI hard disk and a transputer "farm" card with just one extra T800 with its own MB of RAM. And it is well worn—something like 1,800 hours of continuous use to date. Machines are shipped with the Helios operating system (about which this article is main-

ly concerned) and X-Windows, the rapidly emerging standard graphics front end for workstations.

Parallel Processing—In Context

The term "parallel processing," apart from rapidly becoming a fashionable buzz-word, is applied to a wide range of different areas of computing. On the one hand, it is applied to the "very fine grained" instruction level parallelism typified by the working of the brain and other nervous tissue. Here thousands of very simple "instructions" are processed at the same time. In machine terms the ICL DAP computer, and recent "neural network" machines are closest to this type of computing.

A step up from this is the "fine grained" algorithm level parallelism typified by recent approaches to analyzing large matrices or arrays in finite element work. Also applied to graphics operations such as rendering (amongst others), this is the level at which the design of the transputer was initially targeted. On the transputer Occam remains the best approach to attacking such problems although in other environments there are other languages (such as dialects of Fortran) which operate at a similar level. This is an area where 10s and 100s of parallel operations can be seen to be of benefit.

However, it is the next level of parallelism, "coarse grained," which has the widest level of applicability. It is also the level at which Helios and the "parallel" languages are best suited. Here applications are broken down into "tasks" and these tasks run on separate processors (making use of between one and, say, 20 processors). Conceptually, it is easy to picture the use of a limited number of processors for any application (and of course even easier to imagine running multiple concurrent applications). Just consider, for example, a Desktop Publishing (DTP) package. One processor can be running the "operating system" task, another the "window manager" task, another the "font management/display" task, another the "spelling checker" task, and another the basic "editor" task—already five processors used to create a super-fast DTP environment.

It should be clear from this example that "parallel" processing is already all around us—designers of operating

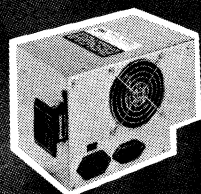
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Figure 1

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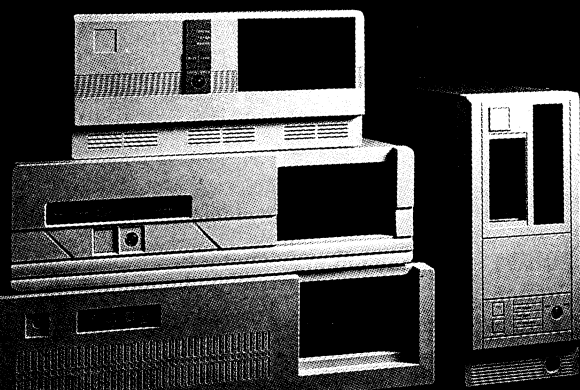
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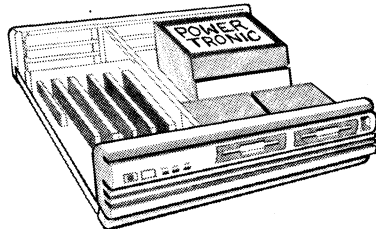
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CDL Constructors

A ^ B Parallel Constructor (no communication)
A > B Pipe (Output to Input—A | B is equivalent)
A < B Reverse Pipe (Input from Output)
A <> B Bi-directional (B a subordinate of A)
A || B Farm constructor (Note 1)
[4] | B Replicator (Note 1)

Note 1: The use of the Farm constructor in combination with the replicator is probably the most powerful of the constructs. Consider the logical construction "A | B | C." A feeds B which in turn feeds C. Suppose now that task B takes up four times the CPU resources compared with A or C. Under Helios the construct "(A [4] || B) | C" will cause "B" to be duplicated across four processors and Helios will farm the data out in turn to each of the 4 processes and collate the results for passing on to C—the bottleneck caused by B is thus eliminated.

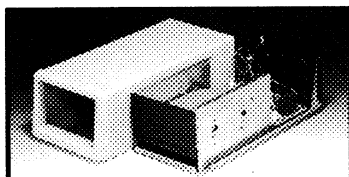
Figure 2

► THE EASY-DRAW SYSTEM FOR ATARI ST

suitable for home and newsletter use. Draw-Art Professional is even a bigger set of commercial-grade illustrations suitable for any publishing or advertising need, and the big advantage to this set is that they are all GEM layered objects. A Border Pack is available as well, and new art packages will certainly keep coming. They vary in price from \$29.95 to \$49.95 depending on how much is in

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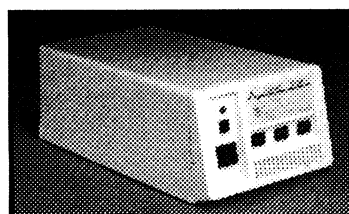


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► SUPER ATARI

purpose programming environment.

The way in which both the 3L "parallel" languages and the Helios operating system get around this is through the use of a higher level of communication—message passing. The advantage with messages is that they are able to be sent between different locations simply by changing the address and that they can be sent in packets—i.e., a number of different messages may be sent down the same physical channel.

In addition, it is possible to get messages between two different locations by different routes—configuration dependency is largely removed. Messages also provide a convenient mechanism for introducing a degree of fault tolerance within a system. If a message doesn't get through, the waiting process simply sends a request for it to be sent again—it doesn't lock up.

The actual theory behind message passing is well documented and has been applied to operating system design for many a year (Tanenbaum's Minix uses message passing). The trick behind both the 3L languages and Helios is the way in which they both ensure that messages get routed correctly and without getting mixed up, without the programmer intervening.

The only real difference between Helios and the 3L approach is that Helios does it in an operating system, 3L within the language itself. Since the 3L method requires non-standard inclusions in the code, my own preference is for the Helios approach. Apart from the additional facilities provided by a full operating system it also lends itself to faster adoption by other languages. (I have not used the 3L languages.)

Helios—The Operating System

Helios is a fully-fledged operating system which provides all the facilities found under DOS, etc. Unlike DOS (but like UNIX), Helios is multi-user and provides the security controls

necessary for this mode of operation. Languages now available under Helios include Ansi C, Fortran-77, BCPL, Modula-II, Pascal, Occam under the Immos TDS, BASIC, and an AI language called Strand.

Over the next few months Lisp, Ada, and Prolog—among others—are expected to become available. At a system programming level of a 95% complete version of the POSIX defined UNIX library is implemented along with a complete clone of the UNIX csh shell and all the standard UNIX utility programs and facilities. At a lower, Helios-specific level, support is provided for message passing, list and queue handling, and semaphore control. Access to graphics is provided via version 11.2 of X-Windows—itsself a system based around message passing.

As an operating system, Helios has the advantage that it has been designed using latest software technology without problems of backward compatibility (unlike OS2). The most notable external evidence of this is in the size of the Helios nucleus (it needs no more than 100K to run) and the modular nature of the nucleus programs.

Very briefly, the nucleus consists of a kernel (containing memory management, the message handling, semaphore control, etc.) which is about 15K of transputer assembler. As this is the only part of Helios tied specifically to the transputer there is no reason why Helios could not be ported to other hardware environments should the requirement arise. Also in the nucleus is the system library. This is responsible for creating and accessing the "Objects" and "Streams" which are used to represent all Helios components from files, through executables, to processors themselves—all objects may be accessed with the same system calls. The remaining tasks consist of the Server library—which provides access to external "objects" to the processor; the Loader—responsible for loading objects into memory; the Process Manager—respon-

sible for controlling access to competing processes; and the Link Guardians—responsible for controlling access to the processor across the links. These programs represent the core Helios and they must be present on all Helios nodes. Raw transputer nodes—for use by Occam—are available under Helios through a TDS gateway. This allows "coarse grained" Helios applications to control "fine grained" processes better suited to the Occam model.

The flexibility of Helios and the distributed nature of the operating system is evidenced by the way other parts of the system appear. There is a RAM disk manager (which only goes on those processors needing a RAM disk), the window manager only gets loaded on the processor which has a console attached, and the printer drivers only get loaded on those that have a printer attached, etc. This is in direct contrast to how UNIX and DOS operate—where everything is loaded—regardless of where it is used.

This concept also applies to the language support libraries. Separate modules exist for "C," the floating point routines (different, depending on whether the floating point T800 or integer T414 is being used), and the POSIX library. These only get loaded where needed, a fact which is common to all language support libraries. Furthermore, once loaded these become available to all applications using the library—they are "shared." In practical terms this means that the executable size of applications is generally a lot smaller than the UNIX or DOS equivalent. For example, one application—written in Fortran—has an executable size of about 30K under Helios.

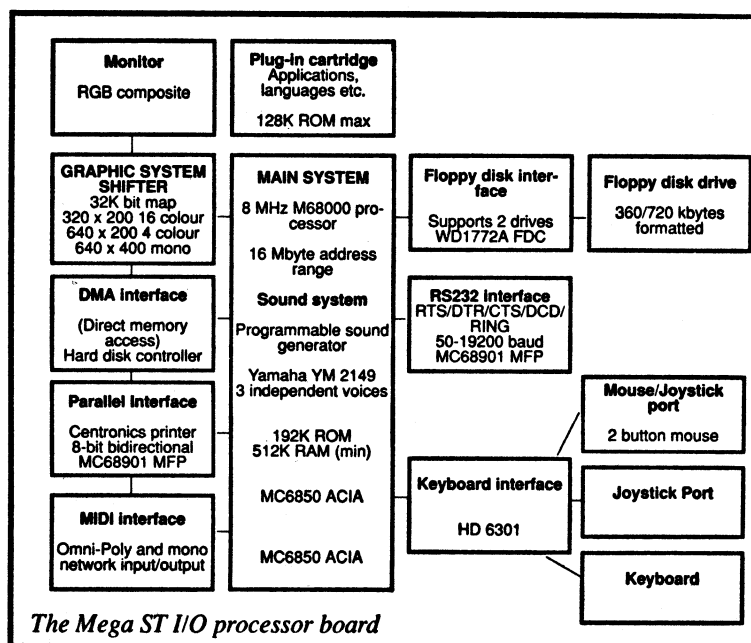
On a Sun running UNIX, the same executable is about 130K.

None of this is any good without a degree of stability, and while it is true to say that Helios is not without its early bugs it is certainly a lot more stable than expected. (Reports to the contrary arising out of COMDEX in Las Vegas were due to problems with the first Issue 4 machines to appear in the field—they were very over-sensitive to static electricity—a problem now being resolved.) As evidence of this I have personally put about 4MB of "C" through the Helios "C" compiler and about 5MB of Fortran source through the Meiko/Top Express F77 compiler running under Helios (which itself uses BCPL). I have also been using X-Windows as a working environment for the last couple of months.

Aside from the degree of compatibility with existing UNIX systems, the part of Helios which is of most interest is its ability to handle parallel forms of computation.

Multi-threaded Routines Under Helios

Like OS2, Helios provides support for multi-threaded code. In Helios terms, multi-threaded code is different to multi-tasked code in that the former usually involves hiving off a function



The Mega ST I/O processor board

ATARI ST ATARI ST ATARI ST ATARI ST ATARI ST ATARI ST ATARI ST

within the executable to run as a separate process on the same processor. It is thus able to share variables and address space without resorting to message passing.

The Helios system level calls to achieve this are appropriately named NewProcess(), RunProcess(), ZapProcess(), and a combination of the two former—Fork() (not to be confused with UNIX/POSIX fork()). These calls allow the programmer to name any function as being able to run in parallel with the rest of the application—it does not have to be a separately executable module.

The most common use of such a construct is to provide an event handling mechanism within an application. Consider the case where an application is waiting for a mouse button press or a keyboard press. Using standard programming constructs both devices have to be polled (not possible using ANSI standard "C") or the program has to wait for one or the other, but not both at the same time—and the program locks while waiting.

Through two calls to Fork() and by setting up suitable semaphores to ensure that device events do not get confused it is possible for the application to monitor both devices at the same time and, if nothing is happening on either, for it to go away and do something else until something does happen. Under other operating systems the same result is usually achieved through monitoring interrupts in a very machine dependent way—not good for portability.

Multi-tasking Under Helios

For the purposes of this article multi-tasking is considered to be running two tasks in parallel on the same processor. These may be stand-alone programs with no intercommunication or they may be separate tasks within the same application which communicate with one another.

This form of "parallelism" has again been around for quite a while. The UNIX command line suffix "&" causes that task to run in the background while other tasks run in the foreground. More obvious perhaps are those cases where different applications are running on different windows on the same screen (Apple's Multi-Finder, Presentation Manager under OS2, and applications running under X-Windows to name just three). It is even possible to multi-task a single application under DOS. Most "C" implementations have versions of the UNIX fork() and exec() family of system calls (exec() is taken to mean any one of the 6 standard calls). fork() creates a new copy of an executing task and exec() replaces an old task with a new one. Using a combination of these calls it is easy to create separate programs, all running at the same time, all of which communicate through UNIX "pipes" or some other similar mechanism. In practice every command issued to UNIX is a fork() and exec()

call made under the controlling process Init().

Helios provides both command level multi-tasking of complete applications (running under the same or different windows) and the system level exec()

and a variation of the UNIX fork() calls. Here again Helios handles this multi-tasking in an elegant way. It is quite often desirable to have more than one copy of certain applications running at the same time. The most common ex-

ample is the command processor shell (I usually have at least three invocations running on the ATW at the same time). Under many versions of UNIX, doing the same thing would cause three complete copies of the shell program

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ATARI ST NEWS AND COMMENT

by John Nagy

Thomas Dolby, the Pointer Sisters, Moody Blues' Mike Pinder, Fleetwood Mac's Mick Fleetwood. Yes, and more pop entertainers provided the flash Atari almost didn't need at the National Association of Music Merchandisers show held January 19-22. This is the second year Atari has attended, and the response this year was even better than the resounding success of last year. Measured in dealer inquiries, over 250 requests for dealership applications show how seriously the music industry is taking Atari.

While the Mac guys fumed and pointed, the Atari systems literally owned the main floor and third-party developers booths. Even the elusive UltraScript, Atari's PostScript clone, was there producing perfect manuscripts on laser printers using Dr. T's software. Worse yet for the Macintosh developers, the few bits of software they were offering that were better than Atari equivalents or totally unique ran better and faster on the Spectre-equipped ST machines! Spectre is David Small's Macintosh emulation package that has been proven better than a Mac for many uses.

A major item introduced at the NAMM show was The Hotz Box, designed by Jimmy Hotz of Hotz Instrument Technology Systems. With his Chairman of the Board Mick Fleet-

wood, Jimmy showed how to hook up as many as four Mega-4 machines and additional MIDI-equipped keyboards to create incredible music easily. The unit is called a MIDI translator, and has sort of a keyboard of its own, although very different from a standard synthesizer. Press material called it a "quantum leap forward in both human and computer control of music concepts." Hotz devices will be available in configurations starting at \$600 and rising to over \$10,000 for full studio units. You'll have to wait for more specifics on this, as I don't really understand it yet. All I know is that it was designed with the Atari ST in mind, and it drew the biggest of the NAMM crowds, including more music-biz personalities than you can find on MTV. Southern California Atari user groups HACKS, ACES, and ACAOC each lent people power to the NAMM show to make it a success, and Atari awarded them for their help.

The next big Atari product news of this spring might come from the Hanover, Germany Computer Fair, in progress as this article is released. What may be shown there is likely to be the Atari 68030 machine that was not ready for the fall COMDEX. At this time, rumors say it is up and running, with both a UNIX and TOS operating system. Even if it is true, this machine is at least "two weeks" (formerly Atari's

code for "who knows") from production.

Atari does deserve praise for keeping their mouth shut lately. Sam Tramiel's "no product before its time" policy has apparently been expanded to "no word before its product," ending a lot of friction traditionally caused by announcements far in advance of available products. Though this policy makes it more difficult to do columns like this, it gives us all a lot less to be aggravated about.

Atari did release one new product recently, amid zero fanfare. A monitor stand—for around \$25. Hardly earth-shattering either in price or performance, but an attractive matching addition to an Atari work area. It also gives some hope amidst doomsayers—a troubled or failing company would have no interest or time to introduce such an item.

Rumors that Atari is selling off Federated also appears to be false. In fact, Federated is said to be just a few signatures away from becoming distributors of several major Atari third-party developers, including an 8-bit favorite. You'll have the details as soon as I do.

Promotional efforts also are encouraging. Sig Hartmann, Atari's top product man, took all the third-party U.S. developers products he could lay hands on with him to Hanover. He will be pitching domestic software to the foreign markets, to help our sometimes

teetering U.S. marketers to keep the faith. A major American product push in 1989 is still the chant coming out of Sunnyvale. I remain hopeful. Atari stock prices are at last rising, too!

It is said that the 1040STFM (yeah, the 1040 with the TV output) will be available in the U.S. at any moment, and might be offered first to only buyers who can demonstrate membership in a registered Atari user group. While the 1040STFM was available in Canada for a while now, FCC approval has held it out of the U.S. until now. Another deal being worked on would allow each user group a major discount on a single ST computer, bought for club business. Both offers are a long ways from finalized as I write this, but the fact that they are even being considered brings new faith that user group support might be beginning a new age at Atari.

Major news on the user group front has come from ZMagazine's Ron Kovacs. After nearly four years of producing weekly online magazines for bulletin boards and telecommunication services, Ron is introducing Z*Net, a monthly "ready to copy" supplement to be added to user group newsletters. It's a new concept, developed in answer to several continuing problems every club newsletter editor knows too well. Most clubs have trouble getting advertising to help pay for their publications, then have more trouble getting material to print in them. Worse, many news-

► SUPER ATARI

to be loaded into memory. Under Helios only one is loaded, but each invocation has its own local data space. The program is thus shared. This again saves memory. This concept applies to any application—all applications are sharable—a feature of special benefit in the multi-user environment.

What has been discussed so far is parallel processing—but implemented through time-slicing on a single processor. As has been shown, there is nothing new about anything developed so far. What is new about Helios is the ability to execute tasks within an application in parallel on two or more processors. Just as important, Helios will take an application designed to run on, say, 10 processors and run it on, say 5 by time-slicing if only 5 are available. All of this is invisible to the application programmer. All the programmer has to do is specify a logical requirement to the available hardware resources (like Occam).

In line with the rest of Helios, this is available both through the shell and through system level calls within an application. Behind both is an operating system module called the Task Force Manager. It is this (in combination with the Network Server) which is responsible for mapping logical requirements to physical resources and this which en-

sures that messages get passed correctly between communicating processes regardless of which processors the application is using. At the embedded programming level the Helios Execute() call causes a previously loaded object to run on a separate processor. And of course the low level Helios message passing routines are also available to the programmer. However, the real power of Helios lies in its ability to redirect standard input and output between processes running on the same or different processes. In other words, an application can be written which communicates via the standard channels using the standard write/read, fprint/fscanf, fgets/fputs, etc. calls (in the case of "C") and then at run time be told to run across a network of processors.

The nearest analogy to this under DOS is the pipe construct. Under DOS the pipe construct routes output from the standard output channel to the standard input channel of another process. For example "dir | sort" will print a sorted directory listing if typed at the command shell. The same is true under Helios except that—if the CDL (Component Distribution Language) is activated—the "dir" and "sort" programs would each run in parallel on separate processors.

In practice, the CDL takes as input

an extended "pipe" type syntax to describe how the various tasks making up an application are connected. The constructors can be seen in Figure 2.

The relationship between channels and CDL descriptions is managed through nesting using brackets. In this way any level of complexity can be built up. Remember, this "map" is purely a statement of a logical requirement—Helios does all the mapping to physical resources.

Relationships expressed in this way may be used to generate a text description which can then be compiled and used as direct input to the Task Force Manager. This description may be used to further define exactly what resources each task requires. For example, if a particular task requires access to a console (terminal), this can be stated and every attempt will be made by Helios to make this task local to a processor controlling a console.

Because many parallel applications may be built up through the use of the simplest of these constructs—the pipe—it should be clear by now that a correctly designed application will spread its load across multiple processors under Helios but will also run quite happily multi-tasking under UNIX—true portability.

Helios has largely succeeded in mak-

ing the use of a multi-processor environment transparent to the programmer. Until true paralleling compilers become available (which analyze standard code and distribute the load for you), any improvement is likely to be minimal. It is hoped that this article will help to explode some of the myths surrounding parallel computing and encourage more people to investigate its use for an increasing number of applications—it is just a question of attitude. Modular code is all that is really needed for "coarse grained" parallelism.

On this latter point it is interesting to note that early programs had to be designed using a modular approach (there simply was not enough memory otherwise). It is these, rather than the more recent applications relying on vast amounts of virtual memory, that are more likely to take advantage of parallel architectures more quickly. In any case, apart from the very mixed opinions which computer experts have over virtual memory, it is difficult to see how virtual memory concepts can be successfully applied to architecture involving separate processors, each with their own memory.

A complete set of Perihelion's documentation on Helios is available through Distributed Software Ltd. of Bristol, England (0454) 612777. ●

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letter editors produce fewer pages than they would like simply because they don't have time to prepare more. Z*Net provides 12 pages of news and features by nationally known Atari writers, ready to print, and actually pays the groups to use it. National advertising in the supplement makes it all possible, much like network newscasts on local TV stations. Advertisers are very interested, as Z*Net offers "one-stop" ad placement in many group newsletters at once. Atari Corp. is looking hard at the concept to determine how they might become involved. Only in its second month, Kovacs' project has over 2,500 issues committed, and his participation drive has only begun. He expects over 100 groups to join the Z*Net in the next nine months, and ultimately hopes for circulation to over 50,000 readers. More information can be had from Ron at Syndicate Publishing, Box 74, Middlesex, NJ 08846, or call 201-968-8148.

In other user group news, clubs may be coming up against commercial competition while putting on Atari Fairs. One such conflict may occur in the Detroit area this spring. MACE, a Detroit club, is planning a show for May 6 and 7 at the Airport Hilton Hotel in Romulus (next to Detroit Metropolitan Airport). Meanwhile, *ST-World* magazine has a major World Of Atari Show planned for June 24-25 at the Hyatt Regency Hotel in Fairlane Town Center in Dearborn, Michigan, a Detroit suburb. The World Of Atari Shows are a well-organized traveling troupe, who will have their first major appearance in Anaheim, California, at the famous Disneyland Hotel April 22 and 23. Major shows are planned for other areas, and I should have a schedule for you next month. While it appears that both Detroit area shows will in fact occur, one wonders if they will hurt each other's attendance. If you are interested in more information on the World Of Atari Shows, please call 503-673-2259. For information on the MACE show, call 313-973-8825.

Last month I told you about Sprint Telenet's PC-Pursuit costs rising and a cap put on the monthly use of the subscription-dialing telecommunications service. Such an uproar was raised by so many subscribers that Telenet has postponed the hours cap until "further study" can be done. Operators on the company phones likened the days following the hike/cut announcement to World War Three. See, some companies can be persuaded to listen—you have to talk loud enough to be heard over those dropping pins. You can be heard at Telenet by calling 703-689-5454.

In another case of mass-response, thanks for all the letters and requests for CompuServe signup kits. The kits were offered by Atari area manager Ron Luks for readers of this column and of *ZMagazine*. He was so pleased with the number of new users his \$15 free

time and signup offer generated, he has extended the offer until further notice. Just drop a line to *ZMagazine* at the address shown in the Z*Net information, and ask for a kit. Tell us how you like *Computer Shopper's* Atari coverage

while you are at it! I have enjoyed reading your letters and hope to be able to respond to your requests for coverage in the future.

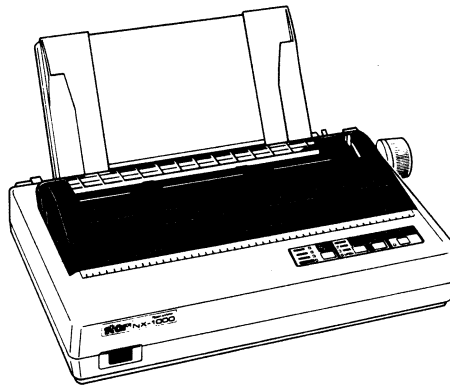
ST modem users have asked what terminal program I recommend. There

are a number of good commercial programs, Flash (Antic Catalog) and Interlink (Intersect Software) are two of the most widely enjoyed and powerful terminal programs available. On the public-domain and shareware front, I

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from page 265

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(and)

Advanced C

by Herbert Schildt

(1988) Osborne McGraw-Hill

ISBN 0-07-881348-4

403 p.

\$21.95

(Companion disk available for \$24.95).

Osborne/McGraw-Hill has a number of semi-independent book series on major programming languages and business applications, with series titles such as *Using* _____, *Advanced*

_____, _____ *Power User's Guide*, _____ *The Complete Reference*, etc.

In the case of C titles, many of these are by Mr. Schildt, who also has a number of other programming books out on the Turbo Pascal, Turbo Prolog, and AI for C Programmers, all from the same publisher. I'm just covering three of them for now:

Turbo C The Complete Reference is divided into five parts. The first part, eleven chapters long, is an overview of Turbo C. Part two, three chapters, deals with actually running the Turbo C environment, using the editor, choosing compiler and linker options, etc. Part three has ten chapters covering the Turbo C Library, with func-

tions for math, I/O, Graphics, and so forth. The last two sections, chapters 25 through 30, deal with actual applications, and using C for more advanced software development, including a good chapter on using AI-Based problem solving techniques, and one on writing interpretive languages, in this case a small BASIC interpreter. An appendix deals with differences between the ANSI draft C standard and "Old" C.

Although I haven't seen it, from the publisher's sales catalogue it appears that the author's *C The Complete Reference* (ISBN 0-07-881263-1) is very similar to this Turbo C version, with an almost identical layout.

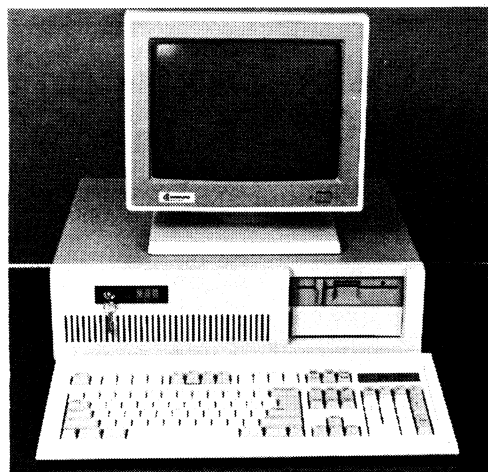
The somewhat shorter *C Power User's Guide* assumes a good working knowledge of the language, and has ten long chapters on advanced projects, including pop-up windows and menuing,

TSR desktop programs, serial communications, more on language interpreters, graphics and mouse interfaces, and so on. Most of the coverage here is slanted toward the desktop & office kind of "power user." There is not much for engineering, scientific, instrumentation, industrial process control, etc.

Advanced C is aimed more at the systems programmer. A review of the basics is included as an appendix in the back, and the ten chapters cover sorting and searching, queues and stacks, assembly language routines, data encryption and compression, parsing expressions, converting Pascal and BASIC programs to C, plus debugging and porting of programs to other environments.

C Programmer's Guide to NetBIOS by W. David Schwaderer (1988) Howard W. Sams

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► ATARI ST NEWS AND COMMENT

suggest you look into Vanterm and Uniterm. My favorite is Vanterm, which features a full GEM interface and works well in all screen resolutions. It is ideal for beginners as well, as it has a "help" mode, where absolutely every function (of the nearly 100 available) will deliver a clear explanation of its use and purpose. Uniterm, on the other hand, is only slightly GEM-controlled, but it has features suited to a wide range of mainframe communication, with emulation of most popular VT100 and up terminals. Both are available online most anywhere.

Last month I reviewed the ST Host Adaptor from ICD Inc., and extolled the virtues of having a hard drive. However, I neglected to warn you of something that has been heard about but seldom understood. The 40-Folder Limit raises its ugly head when a hard drive enters your life. What it means is that under TOS versions currently in ROM, if more than 40 folders are processed without a media change, you run out of memory in the disk-handling routines. While I sort of understood this limit before, it seemed no problem, I would just avoid having too many folders in any single directory. Wrong. All folders count as encountered, since you never do a media change with a hard drive. Once you run out of memory, your directories all go blank! Yike! Fortunately, I did not write to my hard drive while in this condition, as it would have likely written anywhere it wanted—right over anything that belonged there. It was totally unnerving to open a datafile window and find no files where I had earlier filed my *Computer Shopper* articles! The fix is easy—a file called FOLDRXXX.PRG saves the day. Installed in the Auto folder of your hard drive and with a number, say 200, replacing the XXX,

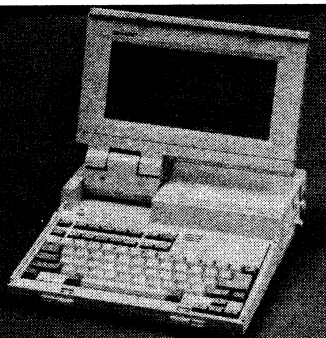
you can go up to 240 folders without a hassle. But beware, don't lose that file or you are back in the soup!

FOLDRXXX.PRG is one of the many public domain programs available through user groups and telecommunication services. Another of my favorites for hard drive use is AC-CSEL06.PRG, a simple and effective desk accessory and auto-folder program selector. While many boot-time selector programs are available, I find it more efficient to be able to select the files I want to use, then click the Accessory Selector's reboot button. Thus, I am annoyed by the process only when I need a different configuration rather than every time I boot.

Atari Corp. released a free program in January called MACCEL.PRG, a mouse accelerator par excellence. Like several other programs designed to increase the speed of the pointer in relation to mouse movement, Atari's new program outdoes the others in that it is proportional. Faster mouse moves get further pointer moves. A small desk area for the mouse can be quite enough. Best of all, no fine accuracy is lost for small moves, and the action of the accelerator is adjustable and switchable. It eats like a mouse—only about 1K of memory. Even if you don't need the room, or don't want the speed, this program comes with a documentation file that is such fun to read, it is worth finding the program for it alone. It gives some humorous insight to what might be going on at Atari behind the development area doors.

Although I have a few dozen things left to say, I'm again out of room. Next month I hope to have a major article profiling the new entrants in the desktop publishing market. Til then, be sure to scour the rest of *Computer Shopper* for Atari articles—it can't all fit here! ●

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APPLYING THE ATARI

by Jeff Brenner

This month we'll take a look at a software product from Logic One, answer some reader mail, and read some interesting commentaries about the status of the 8-bit Atari.

The Enhancement Disk

From Logic One comes The Enhancement Disk, a utility for any 8-bit Atari with extended memory that keeps your RAMdisk intact even after a cold-start or a disk boot. The utility will automatically install and initialize a RAMdisk if one isn't already present. The enhancement must be installed on a SpartaDOS or Atari DOS 2.5 boot disk (two versions are included). Documentation is included on the diskette. The utility works neatly, but its usefulness for you will depend upon how important it is for you to safeguard your RAMdisk contents during a programming session. In any event, it can't stop a power outage from wiping out your RAMdisk contents. For more information, contact Logic One, PO Box 18123, Cleveland, OH 44118-0123.

Reader Mail

Dear Jeff:

My problem is as follows: I own and enjoy an Atari 130XE which I have

plugged into a Radio Shack DMP-105 printer employing an APEFACE interface. I had the printer from my days when I had a complete TRS-80 system. I liked the printer's ease of operation, so I kept it when I sold the "trash-80" and opted for the Atari. The problem is that there is no way I can get graphics programs like PrintShop to print in anything other than "Chinese." Is there any way possible short of buying another printer, to get things to cooperate?

Rudi H. Muys, MSgt. USAF
APO New York

I'm not familiar with the DMP-105, but it is safe to assume that if the printer has graphics capability (beyond the TRS-80 graphics characters), it is not compatible with any of the popular formats (i.e. Epson/Gemini/Panasonic or Okidata, etc.) The more likely situation, however, is that your printer lacks this dot-addressable graphics capability, and therefore is spitting out its own internal characters in response to graphics bytes. Even if your printer did have graphics capability (or for others with printers that feature unusual graphics modes), you would have no way of incorporating any type of conversion driver into any of the heavily-protected graphics programs, such as The Print

Shop. My advice is to pick up one of the many inexpensive Epson-compatible printers available and use it when you need graphics capability. This way, you can still use the features of the DMP-105 when you need them (just unplug the Epson-compatible and plug in the DMP-105) and you can also divide the wear-and-tear between the two printers.

Dear Jeff:

Help! A relative has given me an Atari 800 computer with an 810 disk drive, a 1027 printer, games, etc. I have no manual or instructions. My relative had used the unit mainly to just play the games and can show me how to do that, but little else. Is it possible to buy a new manual? Are there Atari user groups in my area? Any help you can give a novice would be greatly appreciated.

Jeff Ashley
5434 4th Ave. No.
St. Petersburg, FL

This has become quite a popular question, as more and more people have been acquiring or purchasing used 8-bit computer systems. First of all, you'll want to make sure you've got the BASIC language. This is built-in on the XL/XE, but is contained on a cartridge for the

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► MORE TIMEX SINCLAIR

from page 286

users who have not yet discovered) the Time(X)Change BBS, with lots of support and files for TS users.

An interesting letter arrived from EMC Technology Inc. John Steponick wrote to ask where he could purchase hard/software for the TS/1000 and ZX-81 computers. That in and of itself is not too unusual, yet they utilize the units at work to control automatic resistor trimmers. He goes on to add, "You wouldn't believe what we have accomplished with these computers." Specifically John is looking for 64K

memopaks, RS232-Centronic interfaces and software to download Sinclair to IBM computer and vice versa. Hmmmm.....Write John Steponick, c/o EMC Technology, 1971 Old Cuthbert Rd., Cherry Hill, N.J. 08034; (609) 428-8802.

While on the subject of BBSs, here are two more five star numbers to dial for Amstrad PC1512/1640 owners to call. First is a mega-BBS called Rusty & Edie's BBS, operating up to 9600. I like this BBS very well as it offers the serious Amstrad user a whopping 762 megs of online programs to choose from.

Additionally, there are nine nodes and a huge selection of doors, including real time blackjack gambling for additional time online. Rusty & Edie's BBS is free to all callers. (216) 726-2620.

Try the Database BBS at (201) 943-5419, another excellent selection when searching for a vast variety of games, utilities and applications.

Amstrad PCW series owners interested in obtaining directions for installing a 5 1/4" drive, contact Al Warsh, The Amstrad PCW Users SIG, 2751 Reche Canyon Rd #93, Colton, CA 92325.

COMPUTER BOOKS COMPUTER BOOKS COMPUTER B GRAPHIC DESIGN FOR WORDPERFECT

Desktop Publishing with WordPerfect, by Roger C. Parker, has been published by Ventana Press of Chapel Hill, NC. The 330-page book teaches users of WordPerfect's Version 5.0 how to use its many powerful desktop publishing features and how to improve the look of their documents by learning graphic design basics.

The book was produced entirely with WordPerfect 5.0, a testament to the

program's many powerful graphics features. Section One, "Mastering the Printed Page," provides a step-by-step overview of WordPerfect's new desktop publishing commands. Users learn to create boxes, borders, screens, rules, import text and graphics, and work with downloadable fonts and macros. Section Two, "Design Tips and Tricks," builds a variety of documents "from scratch" to show how WordPerfect can

be used to produce more attractive, effective printed materials.

Desktop Publishing with WordPerfect is 330 pages, 7-3/8"x9-1/4", with 220 illustrations. ISBN: 0-940087-15-4. Suggested retail price: \$21.95.

Books are available through computer dealers, bookstores and Ventana Press, PO Box 2468, Chapel Hill, NC 27515. For further information, call 919-942-0220.

CLASSIC COMPUTERS CLASSIC COMPUTERS CLASSIC COMPUTERS CLASSIC

► APPLYING THE ATARI

from page 462

Atari 400/800. You'll have to plug this cartridge into the left-hand cartridge slot before you can do any BASIC programming, unless you obtain a disk-based BASIC.

For an instruction manual, I would recommend the *Atari XL User's Handbook* (or the *Atari XE User's Handbook*) from Weber Systems, Inc. (8437 Mayfield Rd., Cleveland, OH 44026). These books not only include a good introduction to the 8-bit system, but provide extensive Atari BASIC language instruction as well. As for users' groups, check *Computer Shopper's* users' group listing. A users' group is one of the best ways to learn about your machine, and you'll

likely find some of the most helpful people at the meetings. I've included your address so that any users' groups that can be of assistance to you can respond. Dear Jeff:

I have a request that I would like to pass along to your readers. As a user group president and the recipient of all mail addressed to the group, I have had the pleasure to correspond with many of your readers who have contacted us for information, newsletter back issues, membership, etc. As much as we enjoy helping fellow Atari users, we do not have the financial means to provide these costly requests. Our sole means of monetary support comes from our membership and maintaining a

club is not cheap. A single newsletter, for many groups, costs the membership anywhere from \$.50 to possibly \$2.00 each. Add to this the cost of postage and you can see how a group's treasury is burdened by the additional cost of providing this service. Occasionally a requester will enclose a dollar or two to defray costs, but it has been our experience to usually receive nothing.

I have spoken to user group officers across the country and they also have the same problem. How simple it would be to enclose the proper size S.A.S.E., plus a suitable donation, when making a request.

Another misconception about user group wealth results in a constant request from communist bloc nations for donations of books, magazines, computers, disk drives, software, etc. They apparently believe that the United States is the "Land of Plenty" and we have warehouses full of these items just waiting for shipment.

Jeff, you would do a wonderful service to the Atari user groups by mentioning these issues to your readership. Perhaps you could convince your readership that a simple "Thank You" is also not out of line, but sorely neglected.

Peter Shefsky, president
Packerland Atari Computer Society
Sheboygan, Wisconsin

I always remind readers to enclose a donation when requesting photocopies or other information from users' groups, even when these groups offer reprints or other items "free of charge," and I would be happy to do so again. Many people, particularly Atari newcomers, are not aware of the very limited financial resources of these dedicated groups. I cannot thank enough the many Atari users' groups that have come to the aid of individual readers time and time again. This degree of helpfulness is particularly characteristic of the 8-bit Atari community, and any form of contribution (from subscribing to a newsletter to enclosing a small token of appreciation) is well deserved.

Dear Jeff:

Is it possible to make the Atari SX-212 1200 baud modem run at 2400 baud or 9600 baud? If so, is there anyone out there who has plans on making the Atari SX-212 1200 baud modem 2400 baud or 9600 baud? I would appreciate any information on an upgrade for the SX-212.

Steve Hansen
Waterloo, Iowa

You're talking about some intensive circuitry upheaval, and I have not heard of anyone who has undertaken the project. You would probably find it more economical to buy a modem with a higher baud rate than play around with the SX-212 if you absolutely need the faster rate. Readers with additional information or comments on the SX-212 are invited to write in.

Dear Jeff:

A few issues ago you mentioned the

arrival of a new operating system for the 8-bit Atari. It sounded promising so I made inquiries to the address you provided and received a reply from USA Media extolling the virtues of this new system and the fact that a number of programs were available for this new system. Two weeks later I received a similar blurb along with an order form offering a "Buy Two Get One Free Offer," and also a "high quality mouse."

At this point I was still leery about taking the plunge and decided to try and find someone who had seen the Diamond OS in action, but alas no such luck. Eventually I returned the order form and money order for \$96.94 to cover the cost of the software, Diamond OS, Diamond Write, Diamond Paint, and a "high quality mouse." About a week later I received a parcel that contained the Diamond OS and a letter stating that the remainder of my shipment would be sent when available.

The advertising that I received from them and their ad in *Antic* clearly states that these programs are available, but frankly I doubt it. I truly think I've been had and would like to make your readers aware of my misfortune. I would suggest that they wait until someone has published a review of the system and its programs and then wait until they become available through a reputable dealer.

A. Johnson
Largo, Florida

Unfortunately, it is not uncommon among software companies to advertise a product or products before they are available for shipment (or even before they have begun to be created). I have been informed that there have been some "shipping delays" with some of the Diamond products, but they should all be available at the time of this printing. This does not, of course, fit in with the company's advertising that states "available now," so ethically their advertising is questionable.

Legally, you are entitled to a refund on the unfulfilled portion of your order if the company cannot supply the products within 30 days of your order. This applies to any products ordered by mail. If you have not yet received the products, you should request a refund.

Whenever ordering a new software product or products (particularly with an order the size of yours) it is a good idea to exercise patience and give the reviewers a chance to test them out for you. This is particularly applicable to the new 8-bit operating system software packages, since you will want to ascertain which one will offer you the most attractive features and which one will likely become the 8-bit standard. In any event, please write back to me and let me know what has happened with your order. I do not believe the company has any ill intentions.

Comments

In February's column, Mark Peterbaugh wrote about Atari's dismal support of its 8-bit line. I invited additional

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NOTE AND POINT—ATARI 8 BIT NEWS AND COMMENT

by John Nagy

More positive news for Atari 8-bit owners is on hand this month. Included are several ways to access the Atari ST features and, in fact the ST itself.

The 8-bit-to-ST gap is being breached by a new offer from Atari Corp. Registered Atari user groups have been mailed coupons for the use of their members only. Show any authorized Atari dealer the coupon and a serial number off of any Atari 8-bit computer, and you will get an additional \$150 off of your best deal on the newly available 1040STFM. This computer features the built-in disk drive plus the RF modulator needed if using a TV for a monitor. While this does not give nearly the picture quality of an ST monitor, it is sharp enough for games and some text work. The 1040STFM was just recently approved for sale in the U.S. by the FCC, and the first are being offered to 8-bit users via this limited offer. If you aren't part of a user group, join one! If you can't locate one in your area, contact Atari's user group coordinator, Cindy Claveran, at (408) 745-2000. While I would never suggest that any 8-bit user should abandon their capable machine, I cannot stress strong-

ly enough that the ST is indeed far more capable. Consider it if your 8-bit is at the edge of your satisfaction curve.

For those users who do get an ST, remember that the ST-XFormer is available to you in shareware. Darek Mihocka's remarkable 8-bit emulator for the ST will allow you to run much of your old 8-bit software, even right off your 8-bit disk drive. Porting data to the ST has gotten super easy through the use of Darek's new cable that allows using the 1050 and other 8-bit drives directly on the ST machines. The cable is available either by making your own (see plans in February *Computer Shopper*) or by ordering it from Innovative Concepts, the exclusive U.S. manufacturer. Cables are under \$25 at 31172 Shawn Drive, Warren, MI 48093; (313) 293-0730. ST-XFormer software is available via CompuServe, GENie, and countless BBSs worldwide. As shareware, please register your copy if you use it, and send Darek some money for his fine and continuing effort. A new version of the XFormer will be available shortly that will be even more powerful and faster. It will be available only to registered users.

Meanwhile, the software outlook for the 8-bit looks better this month since

Diamond is officially available on cart in a very thorough ST-like operating system. I just received the production version of the cart to replace my beta copy, and it is faster and better than I had even hoped. Diamond gives the look, feel, and power of the ST desktop and GEM operating system to the 8-bit user. It uses an ST mouse or virtually any other input device to drag, click, move, and otherwise operate a window system that makes most users never want to go back to the keyboard. I will have a full review shortly, sorry for not having it this month. I wanted to wait for the "real" ROM chip, and the wait has paid off. Diamond (the stackable cart) is being shipped with a capable art package called Diamond Paint plus the programmer's kit, all for \$79.95 retail. Expect it to show up at dealers eventually, but order now from USA Media, Rt. 2, Box 42, North Patuxent Beach Road, California, MD 20619; (301) 863-8369.

Not available yet for even preliminary comment are the GOE cart, to be offered by Total Control Systems, and the Turbo 816 upgrade unit for the XL/XE computers. Since the ads for GOE, a very similar Graphic Operating Environment to that of Diamond, have

begun to appear in many publications, we must assume that it is very close to being available. Maybe I will have good news on both of these products next month as well.

Another ST-to-8-bit link in the news is MIDI-Maze. Xanth, the folks who brought you some wonderful demos through the years, are developing MIDI-Maze for the 8-bit Atari. This single or multi player game can link 16 players in a maze-shoot-em-up that has been an ST favorite for a couple of years. The new 8-bit version will allow ST and 8-bit computers to play this game in any combination, a big boon to tournament fanatics. Look for this product to be available this summer.

OK, what about "straight" 8-bit software, without the ST leanings? Word of an "XL/XE Developer's Kit" has come from an Atari representative. It is supposed to be available at last (after how many years now?) for assistance to software developers, direct from Atari.

DOS XE has been released by Atari, and copies have been sent to user groups for distribution to their members. However, the single manual may not be duplicated for members, nor sum-

► APPLYING THE ATARI

comments from readers, and the following is a letter from another insightful 8-bit owner.

Dear Jeff:

Mark Peterbaugh's letter regarding Atari's lack of support of the 8-bit community hit the nail on the head. As one of thousands of hard-core 8-bitners (I will never buy an ST because of the extent of my software/hardware investment), I feel we have evolved from the gifted offspring to the bastard child left on the orphanage steps. This feeling, widely shared by the 8-bit community, has been repeatedly reinforced by Atari.

In a December conference on CompuServe, when asked about the future plans for the Atari 8-bit line, Sam Tramiel responded that the U.S. market seems to want more powerful machines; that Atari is selling thousands of XL/XE's in Europe; and that Atari is pushing the XE Game System in the U.S. This evasive response demonstrates that either: 1) Atari is unaware (ignorant) of the desires and extent of the U.S. 8-bit market; 2) Atari is more concerned with fulfilling the needs of the European market than the U.S.; 3) Atari just doesn't consider the 8-bit line to be a serious computer for home use; 4) Atari doesn't give a darn about dedicated 8-bit users; or 5) all of the above.

Recently, DataQue approached Atari with its Turbo 816 (65816 CPU) to determine if Atari would be interested in incorporating it in an upgraded 8-bit

line. This innovative CPU will allow us hard-line 8-bitners to bridge the gap between the 8-bit and 16-bit worlds, and hopefully will be widely accepted throughout the 8-bit community. Despite the staggering profit potential, Atari declined the offer because they felt the product will be competitive with the ST! And with logic like this, Atari wonders why Apple and Commodore are running circles around Atari in the marketplace. Atari has also been approached by Dave Sullivan with his GOE cartridge, and by Shelly Merrill, with Alan Reeve's Diamond OS, with bundling offers, yet Atari has decided to sit on its corporate duff.

Alas, the future of the Atari 8-bit line rests with the user groups and inventive third-party developers such as DataQue, Sullivan and Reeve. The future, unless a drastic change of corporate attitude is made, does not rest with Atari, which appears to be on a self-destruction course. To paraphrase Walt Kelly's Pogo: Atari has met the enemy and it is Atari!

Patrick G. Hayes
East Flat Rock, NC

And now an innovative suggestion for improving the 8-bit situation:

Dear Jeff:

Thank you so much for your continued support of the Atari 8-bit. I am an avid Atari 130XE owner and have been very frustrated by recent developments in Atari Corp. It seems that Tramiel and his cohorts are at present

only producing 8-bit Ataris (its biggest money maker) so they can put their profits into the 16-bit machines, where the profit margin is larger. The local stores are selling the Atari Game System but sadly carry no software except a few old, outdated titles. Not only does this mean that Atari won't sell as many units, but it also ensures that first time customers won't be coming back later for a disk drive, printer, etc. The current treatment of Atari 8-bit computer as only a game machine is sad indeed, and only reinforces old misconceptions. Recently, I decided to place bids on some Apple and Apple compatible computers at work that are being replaced by—you guessed it—IBMs. My reason for considering this is purely for software considerations, as I do feel the Atari 8-bit is superior. But due to the lack of new 8-bit products, you know how it goes.

Which brings me to the reason for writing this letter. In order to truly revitalize the Atari 8-bit product line, I propose a plan where Atari 8-bit users and user groups ban together in a form of user Coop, and promptly buy out Tramiel's 8-bit product line. If all he really cares about is the 16-bit machines, let him keep them. I would certainly be willing to pitch in a hundred or so if it would be returned in stock in a company with decent management, and true concern for what the consumer wants. I am sure other Atari 8-bit owners worldwide

would follow suit. I truly do believe the Atari 8-bit can turn around, but only if controlled by management who cares about the 8-bit product. If we ban together with others interested in reviving the 8-bit line, we can take our place in the computer market where we belong. If we can get this idea across to someone in an Atari users group with the proper legal and organizational skills, we could get it started and going. We could incorporate such things as the Turbo-16, and 80-column text as company standard add-ons. Just think what could happen with the right third party enlistment and aggressive advertising and promotions. Let's do it!

Jeffrey E. Warner
Amarillo, Texas

Sounds like quite an interesting idea. Such a cooperative could even revive many of the hundreds of discontinued 8-bit products and offer an unparalleled hardware/software buy. I would be most interested to hear from other readers with ideas on this suggestion.

Next Month

More Atari news, product information, and reader mail.

Readers' questions, comments and contributions are welcome. Address all correspondence to:

Jeff Brenner
"Applying The Atari 4/89"
c/o Computer Shopper
P.O. Box F
Titusville, FL 32781-9990. •

UNIX UNIX UNIX UNIX UNIX UNIX UNIX UNIX UNIX UNIX UNIX

► BUILDING A UNIX WORKSTATION—PART 2

from page 260

A DC 300/600 tape cartridge is 4"x6"x0.665". The outer case consists of a polycarbonate plastic shell on a heavy aluminum backing plate. The drive mechanism, which consists of a belt winding partially around the tape reels and driven by a roller, is entirely internal to the cartridge itself. The cartridge can be removed from the tape drive while in motion with no spill. Holes in the tape indicate the tape beginning early warning, and end. The holes in the tape are read by a light beam reflected from an internal mirror. In the event that the end of tape is missed, the tape simply falls out of the hub with no damage and the cartridge can be disassembled to reattach it. In order to reduce error rate, the tape is driven at 90 inches per second, which stretches out the flux transitions. The tape head has three write gaps, but there are nine tracks. The head is positioned by a small stepper motor elevator to the initial load point, which is located by a tape hole and light beam.

Three tracks are recorded in the forward direction. The tape then reverses direction, and the head is elevated, thus recording three more tracks. A final forward pass and the tape is full. The head contains two sets of gaps, so read after write verification can be performed when recording in either direction.

Tape drives and controllers are available in two configurations. The "dumb

drive" configuration uses an intelligent host adaptor, and a tape drive with a QIC-36 interface. The QIC-02 standard specifies an intelligent drive, with a much simpler host adaptor. The Archive VIPER 2060L or 2150L are mechanisms of this type. These drives contain a 64K onboard data buffer, and a built-in serial port for sophisticated diagnostics. Intelligent drives have the ability to perform off track stepping for data recovery, which is effective because a media defect seldom traverses the entire track.

Archive manufactures host adaptors, the external chassis (which is a custom job just slightly larger than the drive), and the drive mechanism itself (Figure 7, page 260). A SCSI controller is available which is attached between the drive and the SCSI bus. Both the QIC-02 and the QIC-36 Archive host adaptors are half size boards. A 50 pin Berg connector attaches to the cable for internally mounted drives, and a DB-25 connector is used for external units. I prefer this to other makes which require expensive custom cables for the purpose. Software drivers are available from Archive at no charge for all PC based UNIX implementations, as well as DOS backup software. Should backup be your primary concern, the VP-150 unit is an 18 track unit which provides 150MB in the standard QIC-150 format. This unit can read, but not write 60MB tapes.

The UNIX software driver places the target data in RAM buffers, where it is picked up by an 8 bit DMA channel and transferred to the host adaptor. Because of the rather fast backup rate of 6.75MB per minute, a UNIX system is noticeably slower while reading and writing tapes, but still quite usable.

Some tape systems use the floppy controller in conjunction with tape mechanism for the smaller DC 2000 cartridge. These systems are considerably slower and do not offer single pass read verification. Data capacities are frequently exaggerated by the inclusion of data compression software operable only under DOS. Such systems cannot provide communication with other UNIX workstations.

The quarter inch cartridge is a marvel of mechanical precision, and is far more reliable and durable than the Philips cassette. The primary cartridge manufacturer, 3M, claims a hard 12 error rate of less than one in 3.84×10^{12} . 3M attempts to repair or salvage damaged cartridges which are within the two year warranty period at no charge.

Next month: Building a UNIX Workstation, Part III.

Companies Mentioned

3M Data Storage Products Division
Building 223-5N-01, 3M Center
St. Paul, MN 55144-1000
(800) 328-9438
Archive Corporation

1650 Sunflower
Costa Mesa, CA 92626
(714) 641-0279

Bell Technologies
330 Warren Avenue
Fremont, CA 94539
(800) FOR-UNIX

Digiboard, Inc.
6751 Oxford Avenue
St. Louis Park, MN 55426
(612) 922-8055
Graphic Software Systems, Inc.
9590 SW Gemini Lane
Beaverton, OR 97005-7161
503-641-2200
Hisland U.S.A.
2114 Ringwood Avenue
San Jose, CA 95131
(408) 435-5076

Interfirm Graphics Systems
3940 Freedom Circle
Santa Clara, CA 95054
(408) 970-7070

Leadman, Inc.
2980 Gordon Avenue
Santa Clara, CA 95051
(408) 738-1751

Maxpeed Corporation
1180 Chess Drive
Foster City, CA 94404
(415) 345-6398

Seiko U.S.A.
Graphics Products and Devices Division
1130 Ringwood Court
San Jose, CA 95131
(408) 922-5971

► NOTE AND POINT—ATARI 8 NEWS AND COMMENT

marized for distribution, nor can DOS XE be legitimately put on BBS systems for phone transfers. Atari will sell anyone a copy with the large (over 100 page) manual for \$13.50 each. Comments on the new DOS will be in next month's column. Short analysis: Don't give up your SpartaDOS.

Speaking of SpartaDOS, the manual for SpartaDOS X (the cart) has been finished and has shipped to registered owners. Rumors of the X cart fouling some files, trouble with ATR8000 units, and inability to access 80-track drives are being addressed presently, and definitive answers may be available. Meanwhile, the DOS-On-A-Cart remains a powerful if pricey (\$79.95) option. ICD Inc., 1220 Rock Street, Rockford, IL 61101-1437; (815) 968-2228.

Other software announcements include a couple of terminal programs. Keith Ledbetter, author of the wonderful Express programs, is developing a Cart based (stackable—again!) program that will give the power of sophisticated ST and IBM programs to the 8-bit machine. Using a 64K bank switching ROM, drop-down menus, access to expanded memory, drivers for all modems, and up to 9600 baud, expect remarkable things from this product. Advance orders are being taken by Keith's Orion Systems for \$10 off the

final (June) price of \$69.95. Call for information at (804) 794-9437, or mail to Orion Micro Systems, Attn: Express! Cartridge, 2211 Planters Row Drive, Midlothian, VA 23113.

Another terminal project is being developed by Bob Puff and Canada's Alfred, both well-known for their ARC and ALF compaction programs. While I have no specific info yet, this one should be mighty interesting too, and might be shareware.

Thanks for all the letters and requests for CompuServe signup kits. The kits were offered by Atari area manager Ron Luks for readers of this column and of *ZMagazine*. He was so pleased with the number of new users his \$15 free time and signup offer generated, he has extended the offer until further notice. Just drop a line to *ZMagazine* at the address shown in the *Z*Net* information, and ask for a kit. Tell us how you like *Computer Shopper's* Atari coverage while you are at it! I have enjoyed reading your letters and hope to be able to respond to your requests for coverage in the future.

Also in the mail this month were a few responses to my comments asking for help in locating and "liberating" older programs whose publishers had either folded or quit distribution. Brett Bensley, of Bensley Consulting, wrote

in part, "I have heard more comments from Atari owners that they wish more software was being produced. We have produced educational and other software for other computers (Apple II series, MSDOS, and other systems) so we decided to produce our programs for the Atari. To our surprise, we get less response from the Atari users, so please consider this: there may be many small organizations producing software for the Atari 8-bit computers that have the potential to become famous software manufacturers but will never reach that potential because the Atari community is so fixed on getting the famous companies to produce their [other] software for Atari." Brett included two sample programs for the 8-bit Atari, "Happy's Programs Math" and "Happy's Programs Astronauts." They both carry a \$19.95 list price. Sadly, I cannot predict that Bensley will become a famous company via these two offerings. The Math is the far better of the two, featuring a bit of color, selectable levels and functions for drills in the four basic math functions. Division and multiplication have options to require the user to show his work, and will correct their work as well as provide error cues. Its major fault is the same as Astronauts', that it is a flat all-text presentation. Even public do-

main educational programs often have colorful and well-done graphics, with music and other attention-holding features, but these are absent in these commercial offerings. Astronauts is doubly bad in that it adds a boring and questionable value subject matter: how many times can you stand to be asked to identify the mission number after being told the names of a NASA flight crew? That's as far as Astronauts ever gets. Using the joystick to pick the Graphics #0 text choices helps very little, as does the crude basic rocket that appears briefly after a right answer.

Brett's letter finished, "I do hope that all past, current, and future software producers are given the needed support from the users, manufacturers, and media, that is required to keep the software flowing for the Atari 8-bit computers." I wholly agree, but that doesn't mean we need to embrace inadequate products. Math might be of interest, and Bensley may have other Atari offerings that merit interest. Contact them at Box 301, 217 West Walnut, Westfield, IL 62474, or by phone at (217) 967-5465.

That will have to do for this month, the next few should be exciting! Don't miss the other Atari information in this and future issues of *Computer Shopper*.